

AMENDMENTS TO THE CLAIMS

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

Claim 1 (currently amended): A method for detecting a biochemical ~~reagin-reactant~~ comprising the steps of:

hybridizing a biochemical specimen with ~~probe-a~~ nucleic acids ~~probe~~ on a biochip, ~~having a probe~~ ~~the~~ nucleic acid ~~probe~~ ~~forming~~ ~~including a configuration of~~ a loop structure and arrayed on one ~~or two~~ or more electrodes provided on a surface of a substrate or substrate analog or ~~a probe~~ ~~the~~ nucleic acid ~~probe~~ ~~with~~ ~~of~~ said configuration ~~with~~ ~~but further including~~ a label modification added in advance; and

detecting/discriminating a complex of the ~~probe~~ nucleic acid ~~probe~~ ~~and forming a~~ ~~double chain~~ ~~with~~ the biochemical specimen, ~~forming a double chain~~, by means of at least one of electrical, magnetic ~~or~~ ~~and~~ optical changes on the surface of the biochip.

Claim 2 (currently amended): A method for detecting a biochemical ~~reagin-reactant~~ comprising the steps of:

hybridizing a biochemical specimen with a ~~probe~~-nucleic acid ~~probe~~ on a biochip, ~~having a probe~~ ~~the~~ nucleic acid ~~probe~~ ~~forming~~ ~~including a configuration of~~ a loop structure and arrayed on one ~~or two~~ or more electrodes provided on a surface of a substrate or substrate analog or ~~a probe~~ ~~the~~ nucleic acid ~~probe~~ ~~with~~ ~~of~~ said configuration ~~with~~ ~~but further including~~ a label modification added in advance;

modifying with a label either during or after hybridization one or both of the biochemical specimen and the probe nucleic acid forming a double chain; and

detecting/discriminating a complex of the probe nucleic acid ~~forming a double chain~~ ~~with~~ ~~and~~ the biochemical specimen, ~~forming a double chain~~, by means of at least one of electrical, magnetic ~~or~~ ~~and~~ optical changes on the surface of the biochip.

Claim 3 (currently amended): A method for detecting a biochemical ~~reagin-reactant~~ comprising the steps of:

hybridizing a biochemical specimen modified in advance with a label with a probe nucleic acid probe on a biochip, ~~having a probe~~ the nucleic acid probe including a configuration of forming a loop structure and arrayed on one or two or more electrodes provided on a surface of a substrate or substrate analog or a probe the nucleic acid probe of with said configuration but further including with a label modification added in advance; and

detecting/discriminating a complex of the probe nucleic acid forming a double chain with and the biochemical specimen, forming a double chain, by means of at least one of electrical, magnetic or and optical changes on the surface of the biochip.

Claim 4 (currently amended): A method for detecting a biochemical reagent reactant comprising the steps of:

hybridizing a biochemical specimen modified in advance with a label with a probe nucleic acid probe on a biochip, ~~having a probe~~ the nucleic acid probe including a configuration of forming a loop structure and arrayed on one or two or more electrodes provided on a surface of a substrate or substrate analog or a probe ~~the~~ the nucleic acid probe of with said configuration but further including with a label modification added in advance;

modifying with a label either during or after hybridization one or both of the biochemical specimen and the probe nucleic acid forming a double chain; and

detecting/discriminating a complex of the probe nucleic acid forming a double chain with the biochemical specimen, forming a double chain, by means of at least one of electrical, magnetic or and optical changes on the surface of the biochip.

Claim 5 (currently amended): A method for detecting a biochemical ~~reagent-reactant~~ according to any one of Claims 1 through 4, wherein in the detection/discrimination step ~~measurement~~ includes comparing results obtained from ~~measurements to assess~~measuring at least one of electrical, magnetic and optical changes to the surface of the biochip before the hybridization operation ~~are used as the~~a standard for comparing the ~~measurement~~with results ~~for~~of the biochip following each step.

Claim 6 (currently amended): A method for detecting a biochemical ~~reagin~~reactant according to any one of Claims 1 through 4, wherein in the detection/discrimination step includes measurements are performedmeasuring, before and after the hybridization operation and/or before and after the label modification operation, to assess at least one of electrical, magnetic and optical changes to the surface of the biochip, and comparing these results are compared.

Claim 7 (currently amended): A method for detecting a biochemical ~~reagin~~reactant according to any one of Claims 1 through 4, wherein in the detection/discrimination step includes measurements are performedmeasuring, before the hybridization operation, to assess at least one of electrical, magnetic and optical changes to the surface of a biochip having a plurality of electrodes, and the relative amounts of probethe nucleic acids probe on each electrode are calculated in advance and used as a correctioncorrective reference for the measurementmeasured values after each step.

Claim 8 (currently amended): A method for detecting a biochemical ~~reagin~~reactant according to any one of Claims 1 through 4, wherein the a pre-modification with a label of the probe nucleic acid probe or the biochemical specimen is a multi-stage modification of two or three or more stages in which a second label is added targeting a previous attached first label previously attached.

Claim 9 (currently amended): A method for detecting a biochemical ~~reagin~~reactant according to any one of Claims 1 through 4, wherein the method of modifying the probe nucleic acid probe or the biochemical specimen with a label is a multi-stage modification in two or three or more stages in which a modification with a first label is followed by a modification with a second label targeting the first label.

Claim 10 (currently amended): A method for detecting a biochemical ~~reagin~~reactant according to any one of Claims 1 through 4, wherein the label is selected from among fine metal

particles (including Si), magnetic particles, ceramic fine particles, fluorescent labels, fluorescent dyes, dyes, chemical colorants and semiconductors.

Claim 11 (currently amended): A method for detecting a biochemical ~~reaginreactant~~ according to any one of Claims 1 through 4, wherein the method of detecting/discriminating electrical changes on the surface of a biochip is a method of detecting/discriminating at least one of changes in current values, voltage values or resistance values on a biochip or electrode, ~~or and~~ changes in capacitance on the surface of a biochip.

Claim 12 (currently amended): A method for detecting a biochemical ~~reaginreactant~~ according to any one of Claims 1 through 4, wherein the method of detecting/discriminating as electrical and magnetic changes on the surface of a biochip comprises the steps of:

detecting/discriminating at least one of changes in current values, voltage values or resistance values on a biochip or electrode, ~~or and~~ changes in capacitance on the surface of a biochip; and

magnetically detecting/discriminating a signal from a complex forming a double chain.

Claim 13 (currently amended): A method for detecting a biochemical ~~reaginreactant~~ according to any one of Claims 1 through 4, wherein the method of detecting/discriminating as electrical and optical changes on the surface of a biochip comprises the steps of:

detecting/discriminating at least one of changes in current values, voltage values or resistance values on a biochip or electrode ~~or and~~ changes in capacitance on the surface of a biochip; and

optically detecting/discriminating a signal from a complex forming a double chain.

Claim 14 (currently amended): A method for detecting a biochemical ~~reaginreactant~~ according to any one of Claims 1 through 4, wherein the method of detecting/discriminating as electrical, magnetic and optical changes on the surface of a biochip comprises the steps of:

detecting/discriminating at least one of changes in current values, voltage values or resistance values on a biochip or electrode, or and changes in capacitance on the surface of a biochip; and

magnetically and optically detecting/discriminating signals from a complex forming a double chain.

Claim 15 (currently amended): A biochip ~~constituted by comprising:~~
a substrate or a substrate analog; ~~thereof which has~~
at least one electrode formed on ~~the~~a surface of the substrate or the substrate analog; and ~~having~~
~~probe~~

a nucleic acids probe arrayed on ~~the~~ surface of said electrode, each ~~probe~~ nucleic acid probe
having a loop structure.

Claim 16 (currently amended): A biochip ~~constituted by comprising:~~
a substrate or a substrate analog; ~~thereof which has~~
at least one electrode formed on ~~the~~a surface of the substrate or the substrate analog; and
~~having probe~~

a nucleic acids probe arrayed on ~~the~~ surface of said electrode,
wherein the arrayed ~~probe~~ nucleic acids probe ~~have has~~ a loop structure in which ~~the~~a principal part
~~which that~~ binds complementarily ~~with to~~ the biochemical specimen is located on ~~the~~a substrate or
substrate analog side.

Claim 17 (currently amended): A biochip ~~constituted by comprising:~~
a substrate or a substrate analog; ~~thereof which has~~
at least one electrode formed on ~~the~~a surface of the substrate or the substrate analog; and
~~having probe~~
a nucleic acids probe arrayed on the surface of said electrode, wherein the arrayed ~~probe~~ nucleic
acids probe ~~have has~~ a loop structure in which ~~the~~a free end not fixed to ~~the~~a surface of the

electrode or the a site thereof of the loop structure capable of being modified with a label is located on the a substrate or substrate analog side.

Claim 18 (currently amended): A biochip constituted bycomprising:
a substrate or a substrate analog; thereof which has
at least one electrode formed on the a surface of the substrate or the substrate analog; and
having probe

a nucleic acids probe arrayed on the surface of said electrode,
wherein the arrayed probe-nucleic acids probe have has a loop structure in which a site modified with a first label which allows further modification with a second label is located on the a substrate or substrate analog side.

Claim 19 (currently amended): A biochip constituted bycomprising:
a substrate or a substrate analog; thereof which has
at least one electrode formed on the a surface of the substrate or the substrate analog; and
having probe

a nucleic acids probe arrayed on the surface of said electrode,
wherein the arrayed probe-nucleic acids probe have has a loop structure in which a previously attached-label previously attached is located on the a substrate or substrate analog side.

Claim 20 (currently amended): A biochip according to Claim 18 or 19, wherein the label is selected from metal fine particles (including Si), magnetic particles, ceramic fine particles, fluorescent labels, fluorescent dyes, dyes, chemical colorants and semiconductors.

Claim 21 (currently amended): A biochip according to any one of Claims 15 through 19, wherein the substrate or substrate analog material is glass or semiconductor silicon.

Claim 22 (currently amended): A biochip according to any one of Claims 15 through 19, wherein the substrate or substrate analog thereof is capable of being embedded in a separately prepared electrical circuit board.